

B.TECH. DEGREE EXAMINATION, MAY 2014**Fourth Semester**

Branch : Computer Science and Engineering/Information Technology

CS 010 406/IT 010 404—THEORY OF COMPUTATION (CS, IT)

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

*Answer all questions.
Each question carries 3 marks.*

1. ✓ Define Pigeonhole principle.
2. What are the applications of automata theory ?
3. ✓ Define a context free grammar.
4. ✓ What is the language accepted by TM ?
5. ✓ What does mean SAT ?

(5 × 3 = 15 marks)

Part B

*Answer all questions.
Each question carries 5 marks.*

6. ✓ Write down the difference between primitive and partial recursive functions ?
7. ✓ Differentiate NFA and DFA.
8. ✗ What are the applications of pumping lemma ?
9. ✓ What are the special features of TM ?
10. Write notes on Reduction problem ?

(5 × 5 = 25 marks)

Part C

*Answer all questions.
Each question carries 12 marks.*

11. Define Diagonalization principle. Prove that the set is uncountable.

Or

12. ✓ Explain in detail about the Chomsky classification.

Turn over

13. Conversion of DFA into regular expression.

Or

14. ✓ Write notes on deterministic and Non deterministic finite automation ?

15. State and Prove the pumping lemma for CFL.

Or

16. ✓ Discuss about deterministic and Non deterministic PDA.

17. Explain the various techniques for Turing machine construction.

Or

18. ✓ Prove that the Halting problem is undecidable.

19. Write the characteristic features of p -completeness ? Explain with an example.

Or

20. ✓ State and Prove Cooks theorem.

(5 × 12 = 60 marks)

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